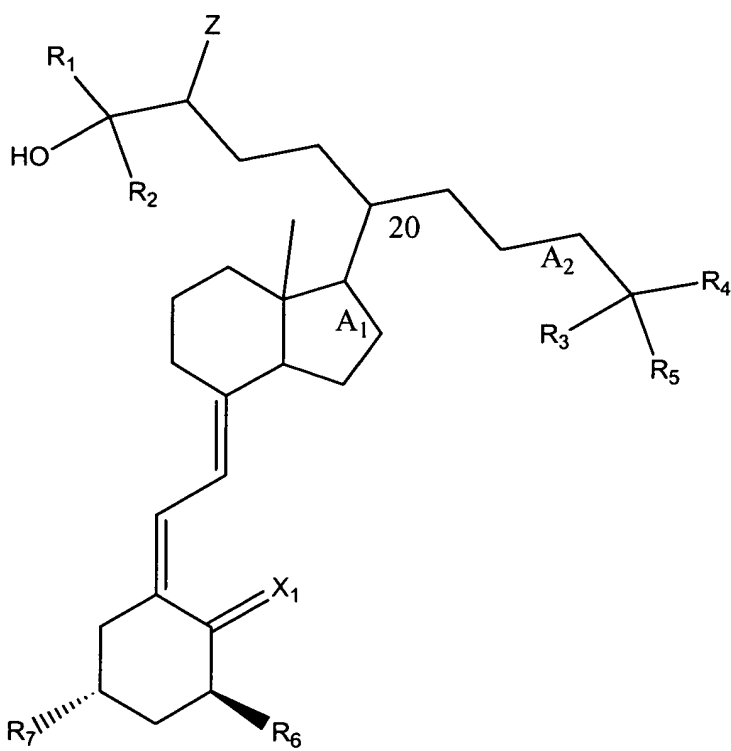


**In the Claims:**

Please cancel without prejudice or disclaimer claims 37-46, 48-63, 65-77, 79, 81, 83-84, 86-88, 92-97, 100 and 103 and please amend claims 21, 24, 34, 36, 47, 64, 78, 80, 82, 85, 89, 91, 98 and 101.

The following listing of claims will replace all previous claims and listings in the application

1. (Original) A vitamin D<sub>3</sub> compound having formula I:



wherein:

A<sub>1</sub> is a single or double bond;

A<sub>2</sub> is a single, a double or a triple bond;

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are each independently C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> deuterioalkyl, hydroxyalkyl, or haloalkyl;

R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> are each independently hydroxyl, OC(O)C<sub>1</sub>-C<sub>4</sub> alkyl, OC(O)hydroxyalkyl, or OC(O)haloalkyl;

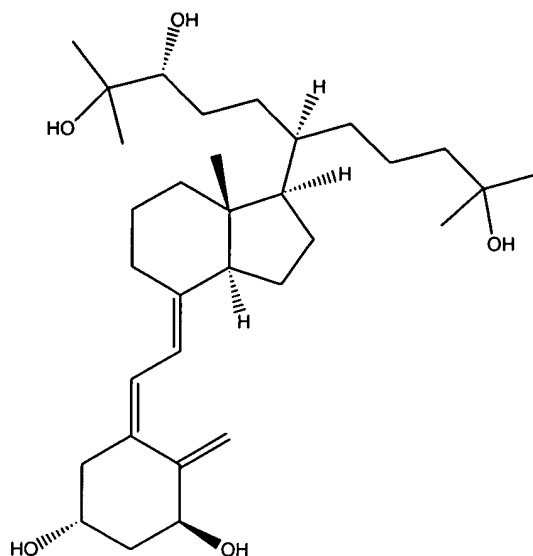
the configuration at C<sub>20</sub> is R or S;

X<sub>1</sub> is H<sub>2</sub> or CH<sub>2</sub>;

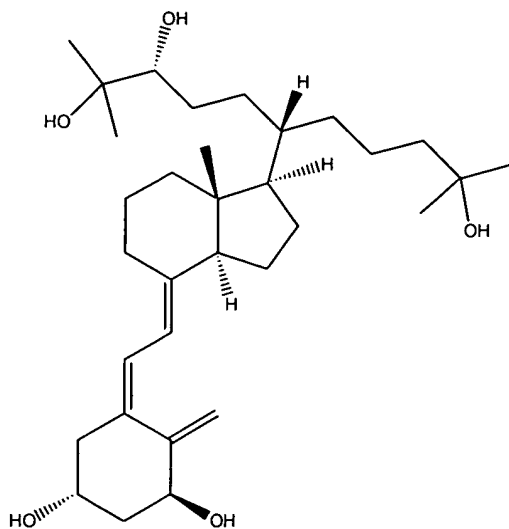
Z is hydrogen when at least one of R<sub>1</sub> and R<sub>2</sub> is C<sub>1</sub>-C<sub>4</sub> deuterioalkyl and at least one of R<sub>3</sub> and R<sub>4</sub> is haloalkyl or when at least one of R<sub>1</sub> and R<sub>2</sub> is haloalkyl and at least one of R<sub>3</sub> and R<sub>4</sub> is C<sub>1</sub>-C<sub>4</sub> deuterioalkyl; or Z is -OH, =O, -SH, or -NH<sub>2</sub>; and pharmaceutically acceptable esters, salts, and prodrugs thereof.

2. (Original) The compound of claim 1, wherein A<sub>1</sub> is a single bond.
3. (Original) The compound of claim 1, wherein A<sub>2</sub> is a single bond.
4. (Original) The compound of claim 1, wherein A<sub>2</sub> is a triple bond.
5. (Original) The compound of claim 1, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are each independently methyl or ethyl.
6. (Original) The compound of claim 1, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are each independently C<sub>1</sub>-C<sub>4</sub> deuterioalkyl or haloalkyl.
7. (Original) The compound of claim 1, wherein R<sub>5</sub> is hydroxyl.
8. (Original) The compound of claim 7, wherein R<sub>6</sub> and R<sub>7</sub> are hydroxyl.
9. (Original) The compound of claim 7, wherein R<sub>6</sub> and R<sub>7</sub> are each OC(O)C<sub>1</sub>-C<sub>4</sub> alkyl.
10. (Original) The compound of claim 9, wherein R<sub>6</sub> and R<sub>7</sub> are each acetyloxy.
11. (Original) The compound of claim 1, wherein X<sub>1</sub> is H<sub>2</sub>.
12. (Original) The compound of claim 1, wherein X<sub>1</sub> is CH<sub>2</sub>.
13. (Original) The compound of claim 1, wherein Z is hydrogen when at least one of R<sub>1</sub> and R<sub>2</sub> is C<sub>1</sub>-C<sub>4</sub> deuterioalkyl and at least one of R<sub>3</sub> and R<sub>4</sub> is haloalkyl or when at least one of R<sub>1</sub> and R<sub>2</sub> is haloalkyl and at least one of R<sub>3</sub> and R<sub>4</sub> is C<sub>1</sub>-C<sub>4</sub> deuterioalkyl; Z is -OH, =O, -SH, or -NH<sub>2</sub> when X<sub>1</sub> is CH<sub>2</sub>; Z is -OH, =O, -SH, or -NH<sub>2</sub> when X<sub>1</sub> is H<sub>2</sub> and the configuration at C<sub>20</sub> is S; or Z is =O, -SH, or -NH<sub>2</sub> when X<sub>1</sub> is H<sub>2</sub> and the configuration at C<sub>20</sub> is R.

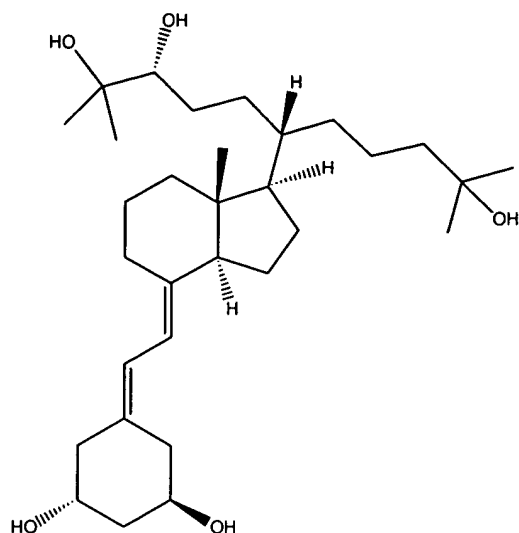
14. (Original) The compound of claim 1, wherein Z is hydrogen.
15. (Original) The compound of claim 13, wherein Z is -OH.
16. (Original) The compound of claim 1, wherein Z is =O.
17. (Original) The compound of claim 1, wherein X<sub>1</sub> is CH<sub>2</sub>; A<sub>2</sub> is a single bond; R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are each independently methyl or ethyl; and Z is -OH.
18. (Original) The compound of claim 1, wherein X<sub>1</sub> is CH<sub>2</sub>; A<sub>2</sub> is a single bond; R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are each independently methyl or ethyl; and Z is =O.
19. (Original) The compound of claim 1, wherein X<sub>1</sub> is H<sub>2</sub>; A<sub>2</sub> is a single bond; R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are each independently methyl or ethyl; the configuration at C<sub>20</sub> is S; and Z is -OH.
20. (Original) The compound of claim 1, wherein X<sub>1</sub> is H<sub>2</sub>; A<sub>2</sub> is a single bond; R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are each independently methyl or ethyl; and Z is =O.
21. (Currently Amended) The compound of ~~any of claim[s] 17 to 20~~ claim[s] 17 to 20, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are each methyl.
22. (Original) The compound of claim 1, wherein X<sub>1</sub> is H<sub>2</sub>; A<sub>2</sub> is a triple bond; R<sub>1</sub> and R<sub>2</sub> are each C<sub>1</sub>-C<sub>4</sub> deuterioalkyl; R<sub>3</sub> and R<sub>4</sub> are each haloalkyl; and Z is hydrogen.
23. (Original) The compound of claim 1, wherein X<sub>1</sub> is CH<sub>2</sub>; A<sub>2</sub> is a triple bond; R<sub>1</sub> and R<sub>2</sub> are each C<sub>1</sub>-C<sub>4</sub> deuterioalkyl; R<sub>3</sub> and R<sub>4</sub> are each haloalkyl; and Z is hydrogen.
24. (Currently Amended) The compound of claim 22 [or 23], wherein R<sub>1</sub> and R<sub>2</sub> are each deuteromethyl and R<sub>3</sub> and R<sub>4</sub> are each trifluoromethyl.
25. (Original) The compound of claim 21, wherein said compound is 1, 25-Dihydroxy-21-(2R,3-dihydroxy-3-methyl-butyl)-20R-cholecalciferol:



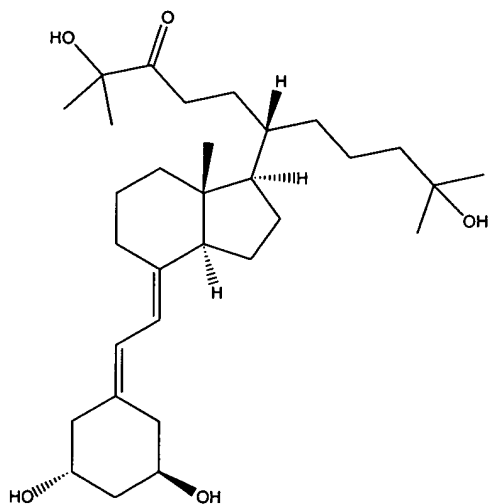
26. (Original) The compound of claim 21, wherein said compound is 1, 25-Dihydroxy-21-(2R,3-dihydroxy-3-methyl-butyl)-20S-cholecalciferol:



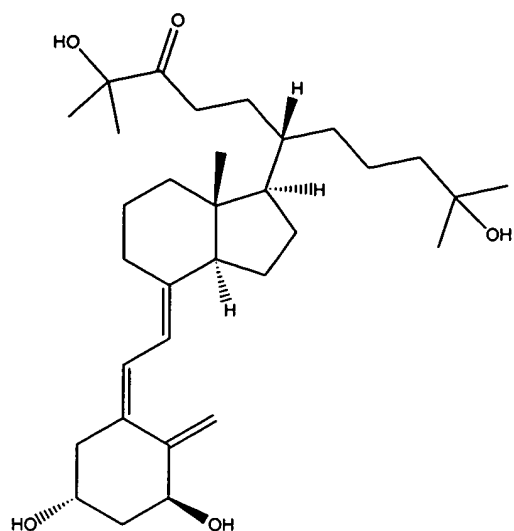
27. (Original) The compound of claim 21, wherein said compound is 1, 25-Dihydroxy-21-(2R,3-dihydroxy-3-methyl-butyl)-20S-19-nor-cholecalciferol:



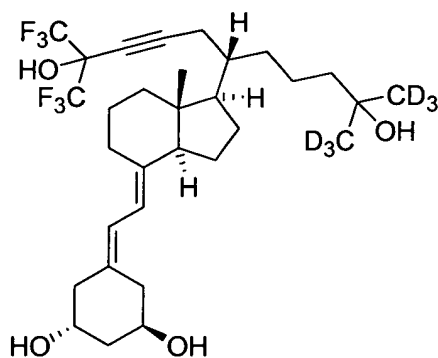
28. (Original) The compound of claim 21, wherein said compound is 1, 25-Dihydroxy-20S-21-(3-hydroxy-3-methyl-butyl)-24-keto-19-nor-cholecalciferol:



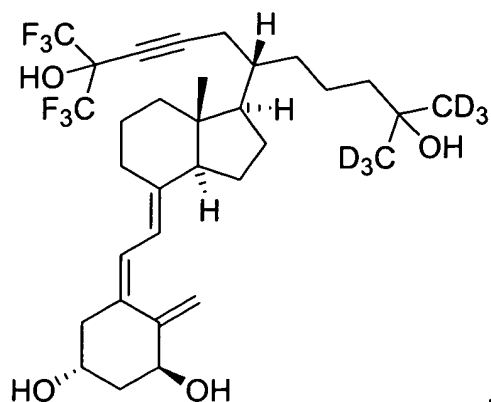
29. (Original) The compound of claim 21, wherein the compound is 1,25-Dihydroxy-20S-21-(3-hydroxy-3-methyl-butyl)-24-keto-cholecalciferol:



30. (Original) The compound of claim 24, wherein the compound is 1,25-Dihydroxy-21(3-hydroxy-3-trifluoromethyl-4-trifluoro-butynyl)-26,27-hexadeutero-19-nor-20S-cholecalciferol:



31. (Original) The compound of claim 24, wherein the compound is 1,25-Dihydroxy-21(3-hydroxy-3-trifluoromethyl-4-trifluoro-butynyl)-26,27-hexadeutero-20S-cholecalciferol :



32. (Original) The compound of claim 1, wherein the haloalkyl is fluoroalkyl.

33. (Original) The compound of claim 32, wherein the fluoroalkyl is fluoromethyl or trifluoromethyl.

34. (Currently Amended) A method for treating a subject for a vitamin D<sub>3</sub> associated state, comprising administering to said subject an effective amount of a ~~Gemini~~ vitamin D<sub>3</sub> compound of ~~any of claim[s] 1 [- 33]~~, such that said subject is treated for said vitamin D<sub>3</sub> associated state.

35. (Original) The method of claim 34, wherein said vitamin D<sub>3</sub> associated state is a disorder characterized by an aberrant activity of a vitamin D<sub>3</sub>-responsive cell.

36. (Currently Amended) A method for treating a subject for a urogenital disorder, comprising administering to said subject an effective amount of a ~~Gemini~~ vitamin D<sub>3</sub> compound of ~~any of claim[s] 1 [- 33]~~, such that said subject is treated for said ~~urogenital~~urogenital disorder.

Claims 37 – 46 (Cancelled)

47. (Currently Amended) The method of claim 35, wherein said disorder is selected from the group consisting of a disorder compris[es]ing an aberrant activity of a hyperproliferative skin cell, a disorder comprising an aberrant activity of an endocrine cell, secondary hyperparathyroidism, a disorder comprising an aberrant activity of a bone cell, cirrhosis, chronic renal disease, neoplastic disease, neuronal loss and a disorder characterized by an aberrant activity of a vitamin D<sub>3</sub>-responsive smooth muscle cell.

Claims 48 - 63 (Cancelled)

64. (Currently Amended) A method of inhibiting transplant rejection in a subject comprising administering to said subject a ~~Gemini~~ vitamin D<sub>3</sub> compound of ~~any of claim[s] 1 [- 33]~~ in an amount effective to modulate the expression of an ILT3 surface molecule, thereby inhibiting transplant rejection in said subject.

Claims 65-77 (Cancelled)

78. (Currently Amended) A method of ameliorating a deregulation of calcium and phosphate metabolism, comprising administering to a subject a therapeutically effective amount of a

vitamin D<sub>3</sub> compound of ~~any of~~ claim[s] 1 [- 33], so as to ameliorate the deregulation of the calcium and phosphate metabolism.

Claim 79 (Cancelled)

80. (Currently Amended) A method of modulating the expression of an immunoglobulin-like transcript 3 (ILT3) surface molecule in a cell, comprising contacting said cell with a vitamin D<sub>3</sub> compound of ~~any of~~ claim[s] 1 [- 33] in an amount effective to modulate the expression of an immunoglobulin-like transcript 3 (ILT3) surface molecule in said cell.

Claim 81 (Cancelled)

82. (Currently Amended) A method of inducing immunological tolerance in a subject, comprising administering to said subject a vitamin D<sub>3</sub> compound of ~~any of~~ claim[s] 1 [- 33] in an amount effective to modulate the expression of an ILT3 surface molecule, thereby inducing immunological tolerance in said subject.

Claims 83 – 84 (Cancelled)

85. (Currently Amended) A method for modulating immunosuppressive activity by an antigen-presenting cell, comprising contacting an antigen-presenting cell with a vitamin D<sub>3</sub> compound of ~~any of~~ claim[s] 1 [- 33] in an amount effective to modulate ILT3 surface molecule expression, thereby modulating said immunosuppressive activity by said antigen-presenting cell.

Claims 86 – 88 (Cancelled)

89. (Currently Amended) The method of ~~any of~~ claim[s] 34-79 or 81-84, wherein said subject is a mammal.

90. (Original) The method of claim 89, wherein said subject is a human.

91. (Currently Amended) The method of ~~any of~~ claim[s] 34-79 or 81-84 wherein said vitamin D<sub>3</sub> compound is administered in combination with a pharmaceutically acceptable carrier.

Claims 92 – 97 (Cancelled)



98. (Currently Amended) A pharmaceutical composition, comprising an effective amount a vitamin D<sub>3</sub> compound of ~~any of~~ claim[s] 1 [- 33] and a pharmaceutically acceptable carrier.

99. (Original) The pharmaceutical composition of claim 98, wherein said effective amount is effective to treat a vitamin D<sub>3</sub> associated state.

Claim 100 (Cancelled)

101. (Currently Amended) A packaged formulation comprising a pharmaceutical composition comprising a compound recited in ~~any of~~ claim[s] 1-33 ~~or 70-73~~, and instructions for use in the treatment of a vitamin D<sub>3</sub> associated state.

102. (Original) The packaged formulation of claim 101, wherein said compound is present in an amount effective to treat a vitamin D<sub>3</sub> associated state.

Claim 103 (Cancelled)